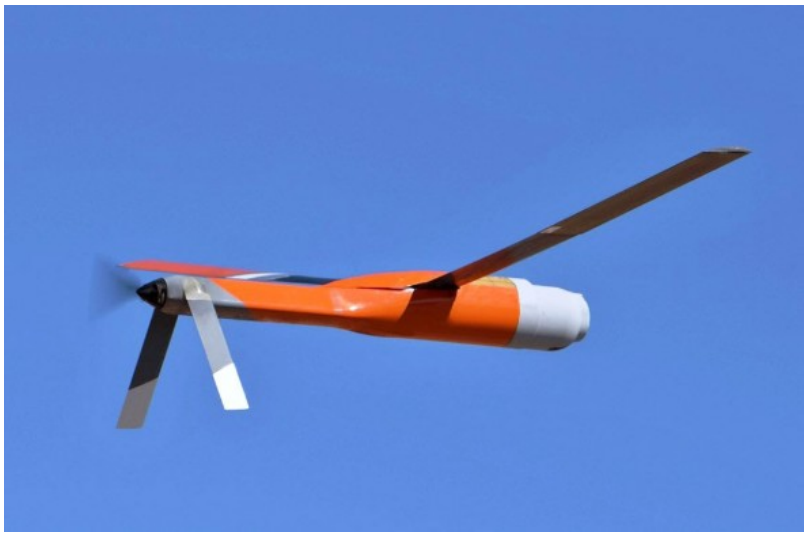
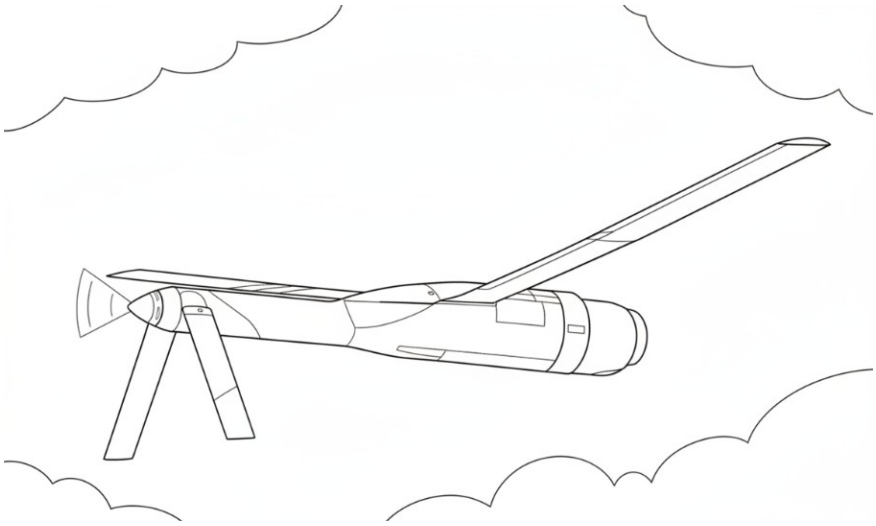
Lockheed Martin MORFIUS Airborne HPM Interceptor





HONORABLE MENTION — IN DEVELOPMENT — Included for awareness; not yet fielded as an operational system as of publication.

IDENTITY & DESIGNATION

Official Designation: MORFIUS (Mobile Radio Frequency-Integrated UAS Suppressor)

Manufacturer: Lockheed Martin Missiles and Fire Control

Airframe Partner: Area-I, Inc. (now part of Anduril)

Type: Reusable, tube-launched, airborne high-power microwave (HPM) interceptor

Base Airframe: Modified ALTIUS-600 (Agile-Launch Tactically Integrated Unmanned System)

Public Reveal: March 2021, AUSA Global Force Next conference

Status: In active development and testing; 15+ test events since 2018; tested at Yuma Proving Grounds in 2023; not yet fielded for operational service

CLASSIFICATION

Domain: Air (effector); launchable from land, sea, and air platforms

Category: Counter-Unmanned Aerial System (C-UAS) interceptor

Sub-Category: Reusable airborne directed-energy effector

Effector Type: High-Power Microwave (HPM) — non-kinetic

Mission Set: Counter-drone and counter-swarm defense in contested airspace

PHYSICAL SPECIFICATIONS

Weight: Less than 30 pounds (13.6 kg)

Form Factor: Fits inside a 6-inch diameter launch tube

Configuration: Tube-launched, fixed-wing with deployable surfaces

Length / Wingspan: Not publicly disclosed in detail; ALTIUS-600 base airframe is approximately 27 inches long with a 33-inch wingspan when deployed

PROPULSION & PERFORMANCE

Propulsion: Electric motor with propeller

Launch Method: Tube launch from ground vehicles, surface vessels, or airborne platforms (fixed- and rotary-wing)

Recovery Method: Recoverable for reuse; specific recovery mechanism not publicly disclosed (likely parachute or net recovery)

Engagement Profile: Flies out from launch point toward incoming drone or swarm, engages with HPM pulse, returns to launch grid or alternate location

Range / Endurance: Not publicly disclosed; tradeoff between airframe endurance and HPM payload power consumption is acknowledged but unquantified

Multi-Engagement Capability: Designed for repeated HPM engagements within a single sortie

HPM EFFECTOR

Power Class: Peak power exceeds one million times the average power of a standard household microwave oven (per Lockheed Martin)

Engagement Mechanism: HPM pulse disables drone electronics across a beam-pattern footprint; effective against multiple targets per pulse rather than single-target lock

Source Maturity: HPM source has more than ten years of test and development data behind it

Verified Effective Against: Group 1 drones (under 20 lb, low altitude — quadcopters and small fixed-wing) and Group 2 drones (under 55 lb, mid altitude) per prior Yuma Proving Grounds testing

Development Gap: Group 3 drones (Shahed-class one-way attack UAS at 4+ km slant range) — 2023 Yuma testing indicated the system requires further development to reliably defeat this target class

AUTONOMY & SENSORS

Onboard Seeker: Equipped with onboard seeker; reduces dependence on external sensors and supports expeditionary deployment

Autonomy Level: Autonomous engagement capabilities described by Lockheed; specific level of human-on-the-loop versus human-in-the-loop control not publicly detailed

Command and Control: Designed for plug-and-play integration into existing C2 architectures and layered air defense systems

STRATEGIC CONTEXT

MORFIUS represents the most publicly mature implementation of airborne HPM as a counter-drone effector. The strategic case is straightforward and compelling. Ground-based HPM systems are constrained by line-of-sight and range limitations, and they cannot follow a threat. By placing the HPM source on a flying platform, MORFIUS extends engagement range significantly and allows defensive forces to engage drone swarms away from the assets being protected. The ability to deliver a single HPM pulse across a beam footprint that disables multiple targets simultaneously is structurally well-suited to the swarm defense problem in a way that kinetic interceptors are not. A kinetic system requires one interceptor per engagement; an HPM system can disable many incoming drones per engagement, fundamentally changing the magazine-depth equation.

Reusability is the second structural advantage. Most current counter-drone solutions are single-use, which means defensive forces consume one expensive interceptor per inexpensive incoming drone. MORFIUS is recoverable and can be refitted between sorties, primarily through battery swap and any required replacement of frangible components such as propellers. This shifts the cost equation in favor of the defender across sustained engagements, particularly against saturation attacks. As of publication, MORFIUS is still in active development and has not been declared an operational system. Public reporting indicates Lockheed Martin continues to refine configurations in coordination with the Army Rapid Capabilities and Critical Technologies Office, and additional tests are planned to demonstrate end-to-end capability against the full target set the threat environment demands.

SOURCE: *Compiled from open-source information including Lockheed Martin official statements (March 2021 AUSA Global Force Next reveal), DefenseScoop coverage of 2023 Yuma Proving Grounds testing, EDR Magazine, The War Zone, The Defense Post, Inceptive Mind, Unmanned Airspace, and Army Technology. All performance figures are approximate or based on publicly disclosed values. Multiple specifications including range, endurance, specific HPM power output, and Group 3 effectiveness remain undisclosed in publicly available reporting and are flagged accordingly. MORFIUS is not yet a fielded operational system; this card is included as an honorable mention for the airborne HPM category.*